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10/714,354	11/14/2003	Guozhu Long	VLO67334US	3329

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EXAMINER	
MEW, KEVIN D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/714,354	LONG ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *11-18* is/are allowed.

6)☒ Claim(s) *1,7,8 and 19* is/are rejected.

7)☒ Claim(s) *2-10 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/10/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 7-8, 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Long et al. (USP 7,177,350).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Long discloses a Digital Subscriber Line system (ADSL system, col. 7, lines 21-22) comprising a transmitter for reusing bit allocations and gain factors (the number of bits to be used and the transmit gain factor to be used, col. 5, lines 36-48) for a normal data transmission mode (from normal operation mode) in a low power mode (to Q-mode, col. 3, lines 51-61), the transmitter (transmitter 402, Fig. 4) comprising:

a first memory (memory 440, Fig. 4) for storing the bit allocations and gain factors for the normal data transmission mode (table of bits b and gains g, col. 7, lines 43-44, col. 5, lines 46-48) and a bit allocation threshold value, T (threshold, col. 5, lines 59-60, col. 7, line 16);

a constellation mapper (PAR algorithm, col. 7, line 16) communicatively coupled to the

memory (communicatively coupled to memory 440, Fig. 4), a data buffer (candidate Q_i table 434, Fig. 4) and a pseudo random sequence generator (pseudo random generator PRBS, col. 7, lines 59-61, element 420, Fig. 4), the mapper determining a number of bits to be retrieved for an ith sub-carrier, bi', in a low power mode (the binary input bits X_i corresponding to the optimum combination of Q_i points is determined, col. 7, lines 11-19) based on a number of bits allocated, bi, for the ith sub-carrier in the normal transmission mode (based on the number of bits to be used on the sub-carrier during SHOWTIME, col. 5, lines 41-48) and the bit allocation threshold T (predetermined threshold, col. 7, line 16);

a transmitter control unit (processing unit 492, Fig. 4) communicatively coupled to the constellation mapper and the memory (memory 440, Fig. 4), the control unit processing messages from a receiver (processing unit 492 for processing message, col. 7, lines 51-54, Fig. 4), including messages related to mode operation (messages 470 including a reconfiguration message received from the receiver, col. 9, lines 23-37); and

a constellation encoder (bit-to-symbol encoder 433, Fig. 4) communicatively coupled to receive the determined number of bits for the ith sub-carrier (receives the set of input bits and encodes them to its corresponding PAR optimized set of constellation point, col. 7, lines 54-57) from the mapper (from the PAR algorithm, col. 7, line 16).

Regarding claim 7, Long discloses the system of claim 1 wherein the transmitter transmits a combined signal of the sub-carriers for the low power mode at about or below a power reduction level (a combination of Q_i points representing a time domain signal at about the minimized Peak-Average Ratio PAR, col. 4, lines 33-50).

Regarding claim 8, Long discloses the system of claim 1 wherein the power reduction level is below or equal to a maximum allowable power cutback level (the PAR is within a threshold, col. 4, lines 33-50).

Regarding claim 19, Long discloses a Digital Subscriber Line system (ADSL system, col. 7, lines 21-22) comprising a transmitter for reusing bit allocations and gain factors (the number of bits to be used and the transmit gain factor to be used, col. 5, lines 36-48) for a normal data transmission mode (from normal operation mode) in a low power mode (to Q-mode, col. 3, lines 51-61), the transmitter (transmitter 402, Fig. 4) comprising:

means for (memory 440, Fig. 4) for storing the bit allocations and gain factors for the normal data transmission mode (table of bits b and gains g, col. 7, lines 43-44, col. 5, lines 46-48) and a bit allocation threshold value, T (predetermined threshold, col. 7, line 16);

means for (PAR algorithm, col. 7, line 16) determining a number of bits to be retrieved for an ith sub-carrier, bi', in a low power mode (the binary input bits X_i corresponding to the optimum combination of Q_i points is determined, col. 7, lines 11-19) based on a number of bits allocated, bi, for the ith sub-carrier in the normal transmission mode (based on the number of bits to be used on the sub-carrier during SHOWTIME, col. 5, lines 41-48) and the bit allocation threshold T (predetermined threshold, col. 7, line 16) being communicatively coupled to the means for storing communicatively coupled to the means for storing (communicatively coupled to memory 440, Fig. 4), a data buffer (candidate Q_i table 434, Fig. 4), a data buffer (candidate Q_i table 434, Fig. 4) and a pseudo random sequence generator (pseudo random generator PRBS, col. 7, lines 59-61, element 420, Fig. 4)

means for (processing unit 492, Fig. 4) processing messages from a receiver (processing unit 492 for processing message, col. 7, lines 51-54, Fig. 4), including messages related to mode operation (messages 470 including a reconfiguration message received from the receiver, col. 9, lines 23-37), communicatively coupled to the means for determining a number of bits to be retrieved (PAR algorithm, col. 7, line 16) and the means for storing (memory 440, Fig. 4); and

means for constellation encoding (bit-to-symbol encoder 433) communicatively coupled to receive the determined number of bits for the ith sub-carrier (receives the set of input bits and encodes them to its corresponding PAR optimized set of constellation point, col. 7, lines 54-57) from the means for determining a number of bits to be retrieved in a lower power mode (from the PAR algorithm, col. 7, line 16).

Allowable Subject Matter

2. Claims 2-6, 9-10, 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 11-18 are allowed.

In claim 2, the system of claim 1 further comprising a receiver for reusing bit allocations and gain factors for the normal data transmission mode in a low power mode, the receiver comprising:

a second memory for storing the bit allocations and gain factors for the normal data transmission mode and a bit allocation threshold value, T;

a constellation demapper communicatively coupled to the memory and communicatively

coupled to receive a signal in an ith sub-carrier from the transmitter, the demapper determining the number of bits, bi', allocated by the transmitter for this ith sub-carrier, in the low power mode based on the number of bits allocated, bi, for the ith sub-carrier in the normal transmission mode and the bit allocation threshold T;

a constellation demapper communicatively coupled to the memory, the demapper determining the number of bits, bi', allocated by the transmitter for this ith sub-carrier, in the low power mode based on a number of bits allocated, bi, for the ith sub-carrier in the normal transmission mode and the bit allocation threshold T;

a receiver control unit communicatively coupled to the constellation demapper and the memory, the control unit processing messages related to mode operation from the transmitter; and

a constellation decoder communicatively coupled to receive an indicator of the determined number of bits allocated for the ith sub-carrier from the demapper.

a constellation decoder communicatively coupled to receive an indicator of the determined number of bits for the ith sub-carrier from the demapper.

In claim 3, the system of claim 1 wherein the constellation mapper, responsive to the number of bits allocated for the ith sub-carrier, bi, in the normal transmission mode being less than a bit allocation per sub-carrier threshold T, retrieving a default number of bits for the ith-sub-carrier in the low power mode from the pseudo random sequence generator, and responsive to a gain scale factor, gi, for the corresponding ith sub-carrier in the normal data transmission mode being non-zero, the transmitter transmitting a dummy signal in the ith-subcarrier.

In claim 4, the system of claim 1 wherein the constellation mapper, responsive to the number of bits allocated for the ith sub-carrier, bi, in the normal transmission mode being greater than or equal to a bit allocation per sub-carrier threshold T, selects the number of bits to be retrieved, bi', for the ith-sub-carrier in the low power mode in accordance with bi' = bi - T + a constant.

In claim 5, the system of claim 1 wherein the constellation mapper, responsive to the number of bits allocated for the ith sub-carrier, bi, in the normal transmission mode being greater than or equal to a bit allocation per sub-carrier threshold T, selects two bits as the number of bits to be retrieved, bi', for the ith-sub-carrier in the low power mode.

In claim 6, the system of claim 4 wherein, responsive to the number of bits allocated for the ith sub- carrier, bi, in the normal transmission mode being greater than or equal to a bit allocation per sub-carrier threshold T, the constellation encoder encoding the number of bits bi' for the ith sub- carrier into a signal using the gain scale factor gi for the corresponding ith sub-cartier used in normal mode.

In claim 9, the system of claim 7 wherein the power reduction level is less than or equal to a power reduction level based on the size of the bit allocation threshold T wherein the power reduction level satisfies a signal-to-noise (SNR) margin which is about equal to the SNR margin for the normal transmission mode plus a power factor scaled by the difference between the SNR

margin required to support a bit constellation having the bit threshold T size and a constant constellation bit size.

In claim 11, in a Digital Subscriber Line system, a method for determining the number of bits to be retrieved for an ith sub-carrier, bi', in a low power mode based upon a bit allocation bi for the ith sub-carrier in a normal transmission mode, the method comprising:

responsive to the number of bits allocated for the ith sub-carrier, bi, in the normal transmission mode being less than a bit allocation per sub-carrier threshold T, selecting a default number of bits to be retrieved for the ith-sub-carrier in the low power mode; and

responsive to the number of bits to be retrieved, bi', for the ith-subcarrier in the low power mode being the default value and the normal data transmission mode gain scale factor, gi, for the ith sub-carrier being non-zero, transmitting a dummy signal in the ith-subcarrier.

In claim 20, the system of claim 19 further comprising a receiver for reusing the bit allocations for the normal data transmission mode in the low power mode, the receiver comprising:

a second means for storing the bit allocations for the normal data transmission mode and the bit allocation threshold value, T;

means for determining the number of bits, bi', allocated by the transmitter for this ith sub-carrier, in the low power mode based on the number of bits allocated, bi, for the ith sub-carrier in the normal transmission mode and the bit allocation threshold T, being communicatively coupled

to the second means for storing and communicatively coupled to receive a signal in the ith sub-carrier from the transmitter;

means for processing messages related to mode operation from the transmitter communicatively coupled to the means for determining the number of bits, bi', allocated by the transmitter and the second means for storage; and

means for constellation decoding communicatively coupled to receive an indicator of the determined number of bits allocated for the ith sub-carrier from the means for determining the number of bits, bi', allocated by the transmitter.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Mew /K. M./
Examiner, Art Unit 2616

/Chi H Pham/
Supervisory Patent Examiner, Art Unit 2616
6/23/08